

**COMMONWEALTH OF VIRGINIA  
Department of Environmental Quality  
Tidewater Regional Office**

**STATEMENT OF LEGAL AND FACTUAL BASIS**

HRSD-Boat Harbor WWTP  
300 Terminal Avenue, Newport News, Virginia  
Permit No.TRO-60351

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Hampton Roads Sanitation District (HRSD) has applied for a Title V Operating Permit for its Newport News, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:\_\_\_\_\_

Date: 2/14/06

Air Permit Manager:\_\_\_\_\_

Date: 2/16/06

Deputy Regional Director:\_\_\_\_\_

Date: 4/5/06

## **FACILITY INFORMATION**

### Permittee

Hampton Roads Sanitation District  
PO Box 5911  
Virginia Beach, VA 23471

### Facility

Boat Harbor WWTP  
300 Terminal Avenue  
Newport News, Virginia

County-Plant Identification Number: 51-700-00068

## **SOURCE DESCRIPTION**

NAICS Code: 221320 – Sewage Treatment Facilities

NAICS Code: 562219 – Non-hazardous Waste Treatment and Disposal

The Boat Harbor Plant provides both primary and secondary municipal wastewater treatment for the Hampton Roads area, serving mainly Newport News and Hampton clients. The Boat Harbor Plant is rated to treat a design maximum average dry weather flowrate of 25 million gallons per day (mgd) and sized to accommodate an instantaneous wet weather peak hour flowrate of 50 mgd. The facility process units are grouped into four main functions: liquids management, solids handling, sludge incineration, and other combustion units.

**Liquids management** – all of the unit processes that treat the received wastewater prior to discharge to the James River. These unit processes include the septic tank truck unloading, Jefferson Avenue pump station, headworks (influent screening and pumping), grit removal chamber, aerobic influent distribution, aerobic reactors, primary and secondary clarification, chlorine contact basin and sodium bisulfite injection.

**Solids Handling** – unit processes that treat liquid treatment by-product streams before disposal. These unit processes include grit handling, raw and primary scum holding tank/concentrator, flotation thickener, primary and waste biosolids holding tank, biosolids day tank, dewatering centrifuges, biosolids screw conveyors, foreign biosolids storage and handling, biosolids belt conveyors, and ash storage/disposal.

**Sludge incineration** – two identical multi-hearth incinerators are used to dispose of dewatered solids from the solids handling sections. Each incinerator has eight hearths, a dedicated induced-draft fan and an air-pollution control train consisting of a precooler, venture, and an impingement scrubber. The incinerators use either natural gas or fuel oil to supplement combustion.

**Other combustion units** – two kerosene electrical generators provide power for the entire plant if utility power is lost or if the Virginia Power Company requests the plant to reduce load. A small diesel solids-handling emergency generator supports incineration operations during a loss of power, and a distillate fuel burning heating boiler located in the administrative building.

The facility is a Title V major source of NO<sub>x</sub>, VOC, SO<sub>2</sub>, and CO. This source is located in an attainment area for all pollutants. The facility is permitted under Minor NSR Permits, issued on 02/13/73 and 04/24/00.

North Carolina is an affected state.

### **COMPLIANCE STATUS**

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

## EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following :

| Emission Unit ID                  | Stack ID | Emission Unit Description   | Size/Rated Capacity*   | Pollution Control Device (PCD) Description   | Pollutant Controlled | Applicable Permit Date |
|-----------------------------------|----------|---|--|--|----------------------|------------------------|
| <b>Incinerators</b>               |          |   |  |  |                      |                        |
| I-1/I-2                           | 2        | Multi hearth sludge incinerators(natural gas or distillate oil as backup), 1973 | 15 burners rated at 2.7 MMBTU//hr each per incinerator. 43 dry tons/day (sludge) per incinerator | Pre-cooler with Venturi scrubber followed by impingement (tray) scrubber (water only). ARCO products Model No. VS-37-JS-2060. 1973 | PM/PM-10 (Odor)      | 02/13/73               |
| <b>Liquids Management</b>         |          |   |  |  |                      |                        |
| L-1                               | 3a or 3b | Liquids Management, 1940  | 25 mgd (dry) (wastewater)  | Two stage packed tower scrubber (water plus NaOCl and NaOH). Mass Transfer, Inc. Model Atlac 711-050. 1994.                        | (Odor)               |                        |
| <b>Plant Emergency Generators</b> |          |   |  |  |                      |                        |
| G-3<br>G-4                        | 5a<br>5b | Plant diesel engine electrical generators, 2000                                 | 15.5 MMBTU/hr (1500 kW) each   |  |                      | 04/24/00               |
| <b>Solids Handling</b>            |          |   |  |  |                      |                        |
| S-1                               | 3a or 3b | Solids Handling, 1973   | 25 mdg (dry) (wastewater)  | Two stage packed tower scrubber (water plus NaOCl and NaOH) Mass Transfer, Inc. Model Atlac 711-050. 1994.                         | (Odor)               |                        |

\*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

## EMISSIONS INVENTORY

A copy of the 2004 emission inventory generated from CEDS is attached. Emissions are summarized in the following tables.

| 2004 Criteria Pollutants Actual Emission in Tons/Year |             |              |                 |            |                 |
|---|-------------|--------------|-----------------|------------|-----------------|
| Emission Unit   | VOC         | CO           | SO <sub>2</sub> | PM10       | NO <sub>x</sub> |
| Incinerators  | 7.1         | 128.7        | 200.3           | 3.7        | 20.8            |
| Liquids Management                                    | 5.8         |              |                 |            |                 |
| Generators  | 0.1         | 1.2          | 0.4             | 0.2        | 4.6             |
| <b>Total</b>  | <b>13.0</b> | <b>129.9</b> | <b>200.7</b>    | <b>3.9</b> | <b>25.4</b>     |

## **EMISSION UNIT APPLICABLE REQUIREMENTS - Incinerators**

### **Limitations**

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-40-750 Standards for Particulate Matter (Incinerators)
- 9 VAC 5-50-80 Standards for Visible Emissions
- 9 VAC 5-60-70.E Designation of Emission Standards (Mercury)

The following Federal Regulations that have specific emission requirements have been determined to be applicable:

- 40 CFR 61 Subpart E NESHAP-Mercury

See also NSR permit issued 02/13/73.

### **Monitoring**

The following Federal Regulations that have specific monitoring requirements have been determined to be applicable:

- 40 CFR 64 Compliance Assurance Monitoring

See also NSR permit issued 02/13/73.

### **Recordkeeping**

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include fuel supplier certifications, sludge or stack test results for mercury emissions, PM stack test results with PM emission factors used, PM CAM records, operating procedures, maintenance records, operator training records, daily (monthly average) dry ton biosolids feed rate to active incinerator(s).

### **Testing**

The source conducted PM testing during the first Title V permit cycle and emissions were at 0.04 gr/dscf at 12% CO<sub>2</sub> for dry sludge feed rate up to 44 ton/day. PM testing will be required again if the feed rate exceeds 43 dry tons/day (monthly average) to assure the air pollution equipment can maintain compliance.

Subpart E, Para. 61.53(d) and 61.54, only requires an annual test for Hg if mercury emissions exceed 1,600 grams per 24-hour period—an incinerator stack test performed using Method 101A of 40 CFR 61, Appendix B; or the sludge be tested for mercury levels using Method 105 of 40 CFR 61, Appendix B. The source conducted Hg testing during the first Title V permit cycle and emissions were 19.2 grams/day. The source is required to test the sludge for Hg under 40 CFR 503 every 60 days. (Most recent testing per letter from M. Feltner dated February 15, 2005, reports Hg results to be 15 grams/day.) Since all Hg past test results have been very low and with the 40 CFR 503 requirement of a continuing Hg sludge test every 60 days, no additional 40 CFR 61, Subpart E Hg compliance testing is required for the Title V cycle permit. This issue for more Subpart E testing will be reviewed again at the next renewal. Since the source is required to test if Hg emissions levels exceed 1,600 grams/24-hour period, the requirement for Hg testing was added if Subpart E proposed changes to the plant project the levels to exceed 1,600 grams/24-hour period.

**Reporting**

The permit includes reporting requirements for protocol, testing dates and results of stack tests conducted for PM or mercury and notifications for proposed plant changes that would potentially increase mercury emissions above 1,600 grams/24-hour period.

## **EMISSION UNIT APPLICABLE REQUIREMENTS – Liquids Management (L-1)**

### **Limitations**

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-50-80 Standards for Visible Emissions

## **EMISSION UNIT APPLICABLE REQUIREMENTS – Electrical Generators (G-3/G-4)**

### **Limitations**

The following are limitations from the existing NSR permit issued 04/24/00:

|                     |  |
|---------------------|--|
| Condition 4:        | limiting fuel type and fuel throughput |
| Condition 7:        | limiting visible emissions             |
| Conditions 5 and 6: | limiting criteria pollutant emissions  |

### **Monitoring**

The following are monitoring requirements from the existing NSR permit issued 04/24/00:

|              |   |
|--------------|---|
| Condition 8: | requiring visible emissions evaluations |
|--------------|---|

### **Recordkeeping**

The following are recordkeeping requirements from the existing NSR permit issued 04/24/00:

|               |  |
|---------------|--|
| Condition 11: | requiring records of fuel throughput, fuel supplier certifications, visible emissions checks and VEE's for each generator, operating procedures, maintenance records, operator training records, operating hours of each generator |
|---------------|--|



### **Streamlined Requirements**

The following conditions in the minor NSR permit of February 13, 1973, have been streamlined into the Title V permit:

- Condition 1. Progress reports for construction of incinerators were submitted until operations began. No further reporting is required.
- Condition 2: Stack testing of new incinerators was accomplished after operations began.
- Condition 3: Notifications of proposed stack testing was accomplished.
- Condition 4.1: Section IX of the Title V permit lists State-Only Enforcement issues. Odor is not only an issue for the incinerators but the entire facility (liquids management, solids handling, etc.). The source is complying with Article 5-2 for BACT on odor control for the incinerators by using the scrubber system to control PM on the incinerators. The CAM requirements for monitoring the incinerator scrubber system is a way to also monitor odor control for the incinerators. If PM emissions are minimized, odor is expected to be minimized.

The following conditions in the minor NSR permit of February 24, 2000 have been streamlined into the Title V permit by using the Title V boilerplate language on the same topic—NSR references were added to the Title V regulatory citations.

|                   |                               |
|-------------------|-------------------------------|
| Condition 1       | Used Title V condition VIII.K |
| Condition 2       | Used Title V condition II     |
| Condition 10 & 12 | Used Title V condition VIII.G |
| Condition 13      | Used Title V condition VIII.Q |
| Condition 15      | Used Title V condition VIII.P |
| Condition 17      | Used Title V condition VIII.T |
| Condition 18      | Used Title V condition VIII.L |
| Condition 19      | Used Title V condition VIII.S |

The following conditions in the 40 CFR 61, Subpart E have been streamlined out of the Title V permit:

Para 61.63 (d)(2)(i) and 61.54(a)(2): Initial testing of existing source. Source conducted this testing as required in the 1970's.

Para 61.55(a): Monitoring. Not required as source has no emissions at the specified level to require more testing.

## **GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

### **A. Comments on General Conditions**

#### **B. B. Permit Expiration**

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

9 VAC 5-80-80. Application

9 VAC 5-80-140. Permit Shield

9 VAC 5-80-150. Action on Permit Applications

#### **C. F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

#### **J. Permit Modification**

This general condition cites the sections that follow:

9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources

9 VAC 5-80-190. Changes to Permits.

9 VAC 5-80-260. Enforcement.

9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources

9 VAC 5-80-1790. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas

9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

#### **U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction

9 VAC 5-80-110. Permit Content

## **Y. Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:

40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.

40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70. Designated Emissions Standards

9 VAC 5-80-110. Permit Content

## **STATE ONLY APPLICABLE REQUIREMENTS**

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-40-290 Existing Source Standards for Hydrogen Sulfide

9 VAC 5-60-220 Existing Source Standards for Toxics

9 VAC 5-40-140 Existing Source Standards for Odor

9 VAC 5-50-140 New Source Standards for Odor

9 VAC 5-60-320 New Source Standards for Toxics

## **INAPPLICABLE REQUIREMENTS**

40 CFR 61, Subpart C, NESHAP for Beryllium. Subpart C was intended for a facility that uses beryllium or generates beryllium wastes and then disposes of it. Any beryllium found in the sludge is insignificant and incidental to main purposes of the sludge incinerators.

40 CFR 60, Subpart O, NSPS for Sewage Treatment Plants. Subpart O was effective June 11, 1973, for new or modified sludge incinerators. This plant began construction before this date--per 02/13/73 NSR permit.

40 CFR 63, Subpart VVV, NESHAPS for New and reconstructed major HAPS POTWs. This source is not a major source for HAPS.

40 CFR 60, Subpart Kb, NSPS for Volatile Organic Liquid Storage Vessels. This source does not store a VOC liquid product that is subject to the NSPS.

### INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

| Emission Unit No. | Emission Unit Description                                 | Citation       | Pollutant(s) Emitted (9 VAC 5-80-720 B)         | Rated Capacity (9 VAC 5-80-720 C)                |
|-------------------|---|----------------|---|--|
| ISU-CB-24         | Solids Handling Emergency Generator                       | 5-80-720 C.4.b | N/A   | 66 HP (80 kW)                                    |
| ISU-CB-25         | 2 Incinerator bldg. space heaters (natural gas)           | 5-80-720 C.2.a | N/A   | 0.02 MMBTU/hr (each)                             |
| ISU-CB-26         | Admin. Bldg. Heating Boiler                               | 5-80-720 B.1   | PM, SO <sub>2</sub> , NO <sub>x</sub> , CO, VOC | 1.3 MMBTU/hr                                     |
| ISU-T-1           | Solids Handling distillate oil AST                        | 5-80-720 B.2   | VOC   | 25,000 gal. (installed prior to 1984)            |
| ISU-T-2           | Solids Handling distillate oil AST                        | 5-80-720 B.2   | VOC   | 25,000 gal. (installed prior to 1984)            |
| ISU-T-3           | Solids Handling diesel AST                                | 5-80-720 B.2   | VOC   | 250 gal.   |
| ISU-T-4           | Liquids Management distillate oil UST                     | 5-80-720 B.2   | VOC   | 15,000 gal. (installed after 1984 – NSPS exempt) |
| ISU-T-5           | Liquids Management distillate oil UST                     | 5-80-720 B.2   | VOC   | 1,000 gal.                                       |
| ISU-T-6           | Liquids Management distillate oil UST                     | 5-80-720 B.2   | VOC   | 2,000 gal.                                       |
| Solids Handling   | Unit processes for solid by-products sent to incinerators | 5-80-720 B.2   | VOC   | 25 mgd (dry)                                     |

<sup>1</sup>The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

### CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

**PUBLIC PARTICIPATION – Concurrent Review**

The proposed permit will be placed on public notice in the Daily Press from February 18, 2006 to March 20, 2006.

Draft and proposed permit sent to affected state (NC) on : February 16, 2006

Draft and proposed permit to EPA: February 17, 2006

Comments: